

SCHEDULE OF QUANTITY

Estimated cost Rs.337500/-
E/Money Rs.6750/-
Time: Six months.

Name of work: - Providing LWSS to PC & NC habitation under census village Jhirian and Lakhnoo in Tehsil Sh. Naina Devi Ji District Bilaspur.
 (SH: - Providing and installation of centrifugal pumping machinery with allied accessories).

Sr No	Description of items.	Specifications offered.	Quantity.	Rates in Rs.		Unit.	Amount.
				Figures.	Words		
1	Providing horizontal spindle horizontal split casing/end suction (backfull out arrangement) single/double/ multistages centrifugal pump or combination of pump in series/parrallel of recommended make such as Mather & Platt/KSB/Kirloskar/BEI/Beacon weir as per BIS: 1520-1980 with upto date ammendments, read with IS: 9137-1978 or latest edition suitable for lifting Clear water for under mentioned characterstics with bronze impellers/priming funnels, casing ring and shaft sleeves of bronze, shaft of steel grade EN-8 with cast iron casing coupled directly through a flexible coupling on a Common/Cast steel base plate (base plate to be from the manufacturers of the pumping unit only) to Squarrel cage drip proof induction motor/ motors of standard make such as Bhel/GEC/Siemens/Jyoti/Kirloskar/Crompton/NGEF and suitable for operation on 415 (+/-) 5% volts, 50 cycles/second, 3 phase AC electric supply. The power of electric motor/ motors should be atleast 10% in excess of the maximum power required by the pump in the operation range of (+) 10% and (-) 25% of the duty point head. The motor/ motors as per IS: 325-1978 with upto date ammendments read with IS: 900-1972. It should include cost of bearing	<p>pumps: _____specifications</p> <p>Make. . Model. No. of stages. Material manufacturers certificate to be appended. _____(performance)</p> <p>Head (H) Discharge (Q) BHP absorbed Efficiency (n) NPSH(K) Motors: _____(specification)</p> <p>Make. Model Motor rating (KW) Speed Insulation. Coupling: Base plate.</p>	2 sets			P/Set	
			To be specified by tenderer.				
			2 Nos.				
			2 Nos.				
			2 Nos.				

	<p>nuts, bolts and pointing etc. and should meet the following requirements:-</p> <p>Discharge (Q) 7.81 LPS for each pump 28.12cum/Hr. Per set (Note:Both the sets will rub at a time).</p> <p>Total Dynamic Head: 261.13 Meters. LWL in Sump well (h). 441.00 Meters. Shaft level: 440.50 Meters. Level at discharge point. 677.00 Meters. Suction lift. Meters. Residual head: 3.00 Meters. Static Head. 236.50 Meters.</p> <p>Rising main. Length. 1050 Meters. Dia. 100mm</p> <p>Pumping Hours. 8 Hours. Altitude of Installation above MSL 650 Meters</p> <p>Characteristics of water. Temperature 20° C Ambient Temp. 42° C Turbidity Clear water 50 NTU Alkalinity. Mg/Ca Co3 Size of the solids. Mm Other.</p>					
2	Providing ICTP Main Switch with HRC fuses of L&T/Crompton/Stadnard/Havells make suitable capacity Operational rating as per IS: 4064-1978 with upto date ammendments immediately after the power meter of HPSEB	ICTP Switches. Make. Type Capacity : Amp	2Nos			Each
3	Providing M.S. sheet, steel fabricated floor mounted closed (Almirah type) switch board including angle iron post of suitable height and size ISA 40x40x6mm, duly painted, with steel sheet of 16 gauge comprising, capable of mounting the following accessories with all internal connections:-	Panel/Switch Board: Drawing. Layout plan.	1 No.			Each
(a) (i)	M.C.B Havells/MDS/Standard of make of suitable capacity on incoming feeder with or without initial oil filling as the case may be with neutral linked under voltage releases as per IS: 2516-1985 with upto date ammendments with.	Make. Type Range Suitable Capacity.	1 No.			Each
(ii)	Earth leakage relay. of Standard / Havells / MDS/INDETEC make as per IS: 2516-1977 with upto date ammendment which should have control box operating handle and trip/reset bush button on/off indicators, re-indicating off spring condition of the circuit breaker for over current protection.	E.L.C.B/ELR Make. Type Range: Suitable rating.	1 No.			Each.

	The circuit should be equipped with magnet thermal release with metallic tape etc. It should also be lifted with earth fault for tripping of breaker on occurrence of earth fault on off breaker load side end.					
(iii)	The voltage monitor relay of AE/L&T make three phase with all protection and usual indicator and electric siren against single phasing low voltage, high voltage, reverse phasing, over loading and phase voltage difference as per IS: 3842 (Latest edition).	<u>Voltage Monitor Relay:</u> Make. Type Range. 380-440 V.	1 No.			Each.
(b)	100mm square type A.C. supply voltmeter of AE/L&T/ Rishab make of suitable range with selector switches as per IS: 4064-1978 with upto date ammendments.	<u>Voltmeter.</u> Type. Make Range 0-500 V	1 No.			Each
(c)	Power factor meter of standard make AE/L&T Rishab as per relevant IS code with upto date ammendments of suitable rating.	<u>Power factor meter.</u> Type. Make.	1 No.			Each
(d)	Frequency meter of standard make AE/ L&T Rishab as per relevant IS: Code with upto date ammendments of suitable rating.	<u>Frequency meter.</u> Type. Make. Range.	1 No.			Each
(e)	Bus bar chamber having 1/2 with copper strips having three bars of suitable rating for full length equal to the width of the board for three live phases and suitable for induced current, one copper bar of half the rating of full length for neutral phase as per IS : 8084-1976 and IS: 11353-1985 read with BIS 5578-1985 with upto date ammendments Amp.	<u>Bus Bar chamber.</u> Type Make. Rating Suitable rating.	1 set.			Each
(f)	ICTP switches with HRC fuses of L&T/Crompton/Standard/Havells make and of suitable capacity as per IS: 4064-1978 with upto date ammendments Amp.	<u>ICTP Switches</u> Type. Make Capacity. Amp	2 Nos.			Each
f (i)	Three phase indicator lamps complete with toggle switches for individual motors as per IS: 3452 (P-I&II) with upto date ammendments.	<u>Three phase indicator:</u> Type Make Capacity watt.	1 set.			Each set.
(g)	100mm Square type AC supply Ammeter of AE /L&T Rishab make of suitable range with selector switches and CTS operated as per IS:1248 (P-II) 1983 with upto date ammendments 0-300 Amp.	<u>Ammeter.</u> Type. Make. Range. Suitable rating	2 Nos.			Each
(h)	Capacitor of L&T/Bajaj/Assian/Crompton make as per Is: 2834-1986 with upto date ammendments to raise the power factor at site to 0.95 for direct connections to induction motor individually of required 11 KVAR rating according to HP	<u>Capacitor:</u> Type. Make Range. 11 KVAR	2 Nos.			Each

	offered including cables as per relevant ISI code (of Siemens/Glocter/IEC make) from bus bar chamber to capacitor and also including ICTP switches of appropriate range as per IS: 4064-1978 with upto date ammendments					
(i)	Providing suitable Oil immersed star delta starter of MEI/Kilburn make as per IS: 8544-1979 with upto date ammendments for squirrel cage motor mounted on pannel board with magnetic type overload release and dashpot time lag, under voltage release with or without initial oil filling as the case may be with single phase preventor as per IS 1248 (P-V)-1983 with upto date ammendments.	Starter: Type. Make. Single Phase Preventor. Type Make Capacity.	2 Nos 2 Nos.			Each Each
j)	Providing Hour run meter 50mm dia of recommended CE/ EE make of suitable capacity as per IS: 722 (Latest edition) 0-9999 Hours.	Hour Run Meter. Type. Make. Capacity.	2 Nos.			Each.
4	Providing double flanged cast iron sluice valve of Leader/Kirloskar make of suitable dia for the suction pipe and capable of withstanding the normal seat pressure as per IS: 780-1984 with upto date ammendments.	Sluice valve. Make. Class PN 1.0 Seat Pressure 10.20 kg/cm2 Material.	2 Nos.			Each
5	Providing double flanged cast steel Sluice valve of Leader/Kirloskar make and size one dia higher to the delivery of pump and capable of with standing normal seat pressure and as per IS: 1414/API-600 class ASA-300) with upto date ammendments.	Sluice valve Make. Class ASA-300 Seat Pressure 52 Kg/cm2 Material	2Nos			Each
6	Providing double flanged (Swing type) cast steel reflux valve of Leader/Kirloskar make and of one dia higher than the delivery of pump having bye pass arrangement on the delivery line of pump and capable of with standing normal seat pressure as per BIS 5312-1984 (part-1)/BS: 1868-API-600 with upto date ammendments class ASA-300.	Reflux valve Make. Class ASA-300 Seat Pressure 52 Kg/cm2 Material	2 Nos.			Each
7	Providing double flanged cast steel non return valve of Leader/ Kirloskar make and of 100 mm dia having bye pass arrangement for rising main and capable of with standing normal seat pressure as per BIS 5312-1984 (part-1)/BS 1868 API-600 class ASA-300 upto date ammendments (52 Kg/cm2).	Non return valve. Make. Class ASA-300 Seat pressure 52 Kg/cm2 Material.	1 No.			Each
8	Providing 100mm dia circular dial pressure gauge of Fiebig / Bourden make complete with all accessories such as stop cock, copper tubing etc. as per IS: 3624-1987 with upto date ammendments range 0- 52 Kg/cm2	(Pressure gauge) Make. Range 0- 52 Kg/cm2	2 Nos.			Each

9	Installation of all the items appearing at Serial No. 1 to 8 as per the systematic drawing attached with the tender documents (Drg.No.1)		Job			Job.	
10	Providing and fixing double flanged MS/GI piping work layout to be approved by the Engineer-in-Charge for suction and delivery pipes suitable to pump(s) offered and common header as per the rising main respectively complete with all specials such as bends ,tees reducers/ increasers with companion flanges matching with the relevant specifications of the accessories as indicated in the drawing No.2 including rubber/asbestos gasket of minimum 3mm thickness as per IS 2712-1979 and required number of nuts and bolts as per IS: 1364-1983. The pipes shall be as per relevant IS Code and to withstand 1.5 times total head stipulated under item No.1. The size of the various components to be as under:- (i) Suction pipe 100mm dia Min.length = 15 mtr. (ii) Delivery pipe 80mm dia -do- = 5 mtr. (iii)Common Header 100mm dia -do- = 10 mtr. and will extended upto 5 meters from the outer wall of the pump house in the direction to be jointed.	Suction pipe. (i) Make. (ii)Grade (iii)Thickness (iv)Pressure Rating Delivery pipe and common header: (i) Material. (ii)Grade. (iii)Thickness. (iv)Pressure rating.				Job.	
11	Providing and laying copper PVC insulated armoured power cable (one cable carrying all the three phases) of suitable size and capacity to and all other electrical equipments as per IS: 1554 (P-I)1988 or latest with upto date ammendments of Siemens/ IEC/ICC/GICO/Grandly/National make including all other accessories such as thimbles, flexible, pipes solder, nuts and bolts, cable glands etc. laid in pipes or trenches under floor. Motor side: 16 mm ² Min length = 20 mtrs. Supply side: 25 mm ² Min. length =10 mtrs.	Armoured power cable. (A)Motor side (from switch to starter and starter to motor. Size. 16 mm ² Make Type Capacity Core (B) Supply side(from meter of HPSEB to bus bar and switch) Size. 25 mm ² Make Type Capacity Core	Job			Job.	
12	Providing and fixing double loop earthing and copper plate 600mmx600mmx3mm thick electrode complete with material such as thimbles, nuts and bolts, charcoal and common salt, 25mmx6mm copper strips/ as per IS: 3043-1987 with upto date ammendments for motors and other electrical equipments and digging of pits etc. complete in all respect.		Job			Job.	

Executive Engineer,
I&PH Division, Bilaspur.

TERMS & CONDITIONS

1. The firm shall forward a copy of supply order/indent placed by it for the supply of pumps and motors on the manufacturers/authorized dealers of the pumps and motors to the consignee within 30 days after issue of the letter of intent/award by the Engineer-in-charge. The copy of supply order/indent to the consignee should also accompany the dealership certificate of the dealer for the pumping machinery in case the pumps and motors are arranged from the authorized dealer
2. The firm shall arrange dispatch of offered pumps and motors to the consignee direct from the manufacturers/ their authorized dealer of the pumping machinery for which the supply order/indent has been placed by the firm. The packing slip should indicate the details of materials in the package and material of construction of pumps and motors.
3. The shop test for the pumps and motors shall be carried out at manufacturers works in the presence of representative of the department as per IS: 325-1978. The test performance certificate of the pumping machinery shall be arranged by the firm from the manufacturers and get it approved from the Engineer-in-charge before actual dispatch of the pumping machinery.
4. The firm shall supply the recommended list of spares and quantities required for normal working of pumping machinery (2 years) from the manufacturers of the aforesaid equipment at the time of quoting rates and shall quote item rates for the same also.
5. The firm shall supply the manufacturers manuals for the operation and maintenance of the pumping equipment.
6. The firm shall arrange operation and maintenance training to the operating staff for the pumping machinery without extra cost for a period of 7 days i.e. during the testing period.
7. The **characteristic curves** of the pumping equipment shall be supplied with the offer other wise the tender shall be rejected.
8. The firm shall supply layout drawing in respect of various components, such as suction pipes, valves, cable, trenches, control panel etc. from the foot valve location to the common header, which shall extend upto 5 meter from the outer wall of the pump house towards rising main. The details of foundations required for various components shall also be supplied by the firm within 30 days of the letter of intent/award.
9. The installation of pumping machinery above 100 HP shall be inspected by the technical representative of the manufacturers of rank not less than that of a service Engineer, at the work site and inspection certificate shall be supplied to the Engineer-in-charge. This inspection shall be in addition to the test report and nothing extra shall be paid on this account.
10. All the civil work shall be constructed by the department.
11. The wiring and installation of electric equipment shall be as per HPSEB rules and regulations & subjected to the approval of the Chief Electrical Inspector and or his authorized officer. Any defect pointed out shall be rectified by the firm without any extra cost.

The wiring and installation of all electric equipment shall be done by a licensed contractor of approved class of HPSEB and test report shall be got accepted from the HPSEB authorities on their approved format (form D) for release of power connection by the firm without extra cost.

12. The temporary electrical connection, if required during installation shall be arranged by the firm at its own cost and energy charges shall also be paid directly by the firm to the HPSEB.
13. Prices of all the items shall be FOR site of work inclusive of all leads and lifts and shall be inclusive of all charges of transportation insurance, packing, taxes and duties such as sales tax excise duty and local taxes etc.
14. The rates shall be quoted only on the format of schedule of quantities, which is attached with the tender document giving all specified data so desired there in.
15. The rates offered for the specified makes in the schedule of quantities only shall be considered. Rates quoted for part and or non-specified makes shall lead to rejection of the tender.
16. The site of work is located at 95Km from Bilaspur head quarter on Bilaspur Swarghat Sh. Naina Devi Ji Toba Road road 0.0 km head load is involved. The site is located km from the nearest Railway station. The rates quoted by the firm shall be inclusive of all mechanical and manual transport within all leads and lifts.
17. All the equipment material shall conform to the relevant BIS specifications wherever applicable and in its absence to any accepted National/International standards.
18. The general specifications of work shall conform to Punjab PWD/HPPWD specifications as per direction of the Engineer-in-charge.
19. The validity of the tender shall be not less than 120 days otherwise the tender shall be summarily rejected.
20. All the equipments shall be guaranteed against any manufacturing defect including metallurgy and its performance for a period of 12 (twelve) months from the date of commissioning/ 15 (fifteen) months from the date of supply which ever is earlier. Any defect, if noticed within the stipulated period shall be rectified by the firm at its own cost within 15 days of bringing the same to its notice. The guarantee clause shall be substantiated by a guarantee bond of a Nationalized Bank for an amount equal to the cost of pumping and electric equipment (accessories included) pledged in the name of the Executive Engineer-in-charge at the time of applying for refund of security deposits. The guarantee bound shall be released after the expiry of the guarantee period.
21. The installed pumping machinery and other allied accessories shall be tested daily for 16 hours for a period of seven days without extra cost. However the cost of electricity and water shall be borne by the department.

During the guarantee period efficiency of the pumping and the electric equipment should not vary beyond the range of (+/-) 2.5% If during guarantee period, the efficiency falls beyond 2.5% to a maximum of 5%, 1% cost of the pump set for 1% fall of the efficiency shall be deducted in case of fall of efficiency beyond 5% the pump set shall be rejected and cost of the effected pump set recovered from the pledged Bank guarantee & or from the security deposit as the case may be.

22. 90%(Ninety percent) payment of the cost of pumping machinery and equipment less 10% security and other statutory recovery shall be made after receipt of complete pumping machinery i.e. pump and motor alongwith accessories received together at site of work in good condition. The balance 10% cost after deducting of the security and other recoveries shall be released after successful and satisfactory installation, testing of the entire equipment. Ten percent security deposit shall be released as stipulated in the agreement.
23. 90% (Ninety- percent) installation charges shall be released after satisfactory installation of all the pumping and electrical equipment. Remaining 10% of installation charges shall be released after testing of the entire equipment.
24. 1% cess charges will be deducted from the contractor bill for making payment through software.

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